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CERTIFICATE OF 1st CLASS MAIL

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to MAIL STOP DD, Commissioner of Patents, PO Box 1450, Alexandria, VA 22313-1450, on the following date: August 23, 2004.

Wendy K. B. Buskop

MAIL STOP DD
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Alexandra, VA 22313-1450

RE: *U.S. Patent Application Serial No. 10/780,970;*
Entitled: "Integrated Fuel Cell and Heat Sink Assembly; and
Inventors: Gerard Francis McLean.

Sirs:

Enclosed for filing in the above-mentioned application is:

(1) An Information Disclosure Statement;

(2) A Form PTO-1449 listing references A1-A7 and B1-B3;

(3) Copies of references B1-B3; and

(4) A postcard. Please date stamp and return the enclosed postcard to evidence receipt of these materials.

No fees are believed to be due in connection with these materials. However, the Commissioner is hereby authorized to charge any deficiencies associated with this filing to Deposit Account No 50-1313 in the name of Buskop Law Group. A duplicate copy of this transmittal is enclosed.

Respectfully submitted,

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Gerard Francis McLean **Group Art Unit: 1746**

Serial No.: 10/780,970 **Examiner: Not Assigned**

Filed: February 18, 2004

For: Integrated Fuel Cell and Heat Sink Assembly **Atty Dkt No.: 1134.14A**

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INFORMATION DISCLOSURE STATEMENT

Sir:

I. Applicants hereby submit an Information Disclosure Statement and enclose a Form PTO-1449 listing references for consideration by the Examiner. Copies of references B1-B3 are also enclosed.

II. Applicants hereby request the Examiner to consider each cited reference. As required under 37 C.F.R. § 1.98(a)(3)(i), the following are concise explanations of the relevance of each reference, as they are presently understood:

REFERENCE NO. A1 (US 5,631,099 – Hockaday) "A compact, surface replica fuel cell has a fiber reinforced, porous central membrane and two porous outer membranes. Thin film catalyst and metal electrode materials are deposited on both sides of the central membrane. The electrodes are deposited using a variety of techniques, including ion or light bombardment, etching and vacuum thin film deposition. For compound fuels, two catalysts are deposited. The first catalyst forms the interior surface replica electrode. The second catalyst is positioned on the interior of the pores to scavenge hydrogen before the hydrogen is diffused out of the electrode and electrolyte. A hydrophobic film is deposited over the electrode films to control electrolyte positioning and to strengthen the electrodes. Catalyst surface active area is maximized by separating the catalyst film from the porous, non-electrolyte substrate and filling the voids between the substrate and the catalyst film with an electrolyte. The fuel cell operates by supplying fuel gas to one electrode and an oxidizer gas to the other electrode. The cell may also function as an electrolysis cell for generating reactant gases from the electrolyte. During operation of the present invention, water is captured on cooler outer gas manifold surfaces of the cell and recirculated through electrode vias. Water content is regulated by a coating on the outer porous membranes."

REFERENCE NO. A2 (US 5,759,712 – Hockaday) "A miniature fuel cell system uses porous plastic membranes as substrates of fuel cells. A cost effective pore-free electrode or inter electrolyte foil that is permeable only to hydrogen as an ion. The new electrode makes direct alcohol fuel cells efficient. It blocks the poisoning alcohol diffusion through the electrolyte. Compound electrodes are formed by vacuum deposition methods and slurries. That leads to printed circuit designs of small fuel cells systems integrated with rechargeable batteries and electrical power electronics to power applications that are currently powered by batteries. By directly utilizing alcohol fuels the new fuel cells have higher energy per unit mass and higher energy per unit volume. They are more convenient for the energy user, environmentally less harmful and less expensive than conventional batteries.

REFERENCE NO. A3 (US 5,861,221 – Ledjeff) "An electrochemical cell has at least one membrane strip that forms a central area and at least two, maximum 10,000 flat individual cells. The individual cells consist each of an electrode layer applied on both sides of a membrane made of a polymer solid electrolyte and of a corresponding number of flat electronically conductive areas. The individual cells are connected in series and the central area is provided with an appropriate periphery in the cell."

REFERENCE NO. A4 (US 5,925,477 – Ledjeff) "The invention relates to an assembly of flat single cells consisting of a lid polymer electrolyte and electrode areas applied to both sides thereof into a diaphragm electrode unit in which 2 to 10,000 single cells are connected in series through the stepwise overlapping of the electrode areas (4, 5, 6) of one single cell with the opposite electrode area (7, 8, 9) of the next cell, thus forming a one-dimensional diaphragm electrode unit (1), and a shunt conductive structure of electronically conductive material is placed at least between the overlapping electrode areas."

REFERENCE NO. A5 (US 6,060,188 – Muthuswamy) "A fuel cell (20) can be constructed to be generally formed in the shape of a solid cylinder. The fuel cell has a porous central core (22) of reticulated vitreous aluminum that is formed in the shape of a solid cylinder. The porous central core serves to distribute oxidant throughout the fuel cell. A cathode (23) is situated coaxially around the porous central core, and has a catalytic layer (24) on the outer side. A solid polymer electrolyte (25) is situated coaxially around the cathode and in intimate contact with the catalytic layer. An anode (27) is situated coaxially around the electrolyte, and a second layer of catalytic material (26) is situated between the electrolyte and the anode. A fuel chamber (28) is situated coaxially around and in intimate contact with the anode and arranged to distribute fuel throughout the fuel cell."

REFERENCE NO. A6 (US 6,127,058 – Pratt) "A planar fuel cell (20) is provided, including a membrane electrode assembly (23) sandwiched between two current collector assemblies (21, 22). The membrane electrode assembly is a single sheet of a polymer electrolyte membrane with an array of anodes (27) on one side and an array of corresponding cathodes (28) on the other side. The current collectors (25) can be supported by a plastic frame (24), and they have an interconnect tab (26) that provides an electrical pathway to the exterior of the membrane electrode assembly. The interconnect tab is situated to provide electron transfer between the anodes and the cathodes such that the interconnect tab does not traverse the thickness of the polymer electrolyte membrane. When the planar fuel cell is assembled, the interconnect tab is sealed to prevent leaking of fuel or oxidant gases. Fuel is distributed (36) to only one side of the membrane electrode assembly and oxidant is distributed (36) only to the other side."

REFERENCE NO. A7 (US 6,312,846 – Marsh) "A fuel cell is disclosed which is formed on a semiconductor wafer by etching channel in the wafer and forming a proton exchange membrane PEM barrier in the etched channel. The barrier divides the channel into two. A hydrogen fuel is admitted into one of the divided channels and an oxidant into the other. The hydrogen reacts with a catalyst formed on an anode electrode at the hydrogen side of the channel

to release hydrogen ions (protons) which are absorbed into the PEM. The protons migrate through the PEM and recombine with return hydrogen electrons on a cathode electrode on the oxygen side of the PEM and the oxygen to form water."

REFERENCE NO. B1 (WO 01/95406 – Lee, et al) "In a fuel cell assembly comprising a plurality of cell each including an electrolyte layer (2), a pair of diffusion electrode layers (3,4) interposing the electrolyte layer between them, and a pair of flow distribution plates (5) for defining passages (10,11) for fuel and oxidant fluids that contact the diffusion electrode layers, the fuel cells are arranged on a common plane. Therefore, the vertical dimension f the fuel cell assembly can be minimized, and a fuel cell assembly of favorable electric properties can be achieved. Each flow distribution plate is typically formed with communication passages for communicating fluid passages defined on each side of the electrolyte layer at a prescribed pattern. The communication passages and through holes communicate the fluid passages in such a manner that adjacent fuel cells have opposite polarities."

REFERENCE NO. B2 (GB 2 339 058 – McLean, et al) "A PEM-type fuel cell is formed from layered undulated MEA structures and separator strata alternating with each other in the stack dimension so that each layered MEA structure is disposed between and attached to an associated pair of separator strata 20 so as to form at least one discrete plenum on each side of each layered MEA structure through which plenum reactant gas may be circulated. Each layered MEA structure is formed form proton exchange membrane material 14 sandwiched between a pair of spaced-apart current collectors 22A, 24A with electro-catalyst particles between the membrane material and each current collector so that the membrane material and electro-catalyst particles fill the space between the current collectors, forming together with the current collectors a layered MEA structure. Each separator stratum is attached to and provides an electrically conductive path between the current collectors of the layered MEA structures on either side of the separator stratum."

REFERENCE NO. B3 (JP 8050903) "A pair of gas separating members 6 and 7 nippedly holding a power generation element 5 are provided with protruded parts 6a and 7a, alternately protruded in a direction vertical to a direction in which the power generation element 5 is extendedly provided, o nippedly hold the power generation element 5 by pushing the protruded parts 6a and 7a with each other to the surfaces 6b and 7b of the other side gas separating members. The power generating element 5 is extended in a zigzag in the extendedly provided direction of the gas separating members 6 and 7, and constitute a gas passage for a fuel gas, that is, cathode side gas ro an oxidant gas, that is, cathode side gas."

III. No fees are believed to be due in connection with these materials. This Information Disclosure Statement is being filed prior to receipt of an official Office Action.

Date: August 23, 2004

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Form PTO 1449	U.S. Department of Commerce Patent and Trademark Office	Serial No.: 10/780,970	Group Art Unit: 1746
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)		Filing Date: February 18, 2004	
		Applicant(s): Gerard Francis McLean	
		Atty. Docket No.: 1134.014A	

A REFERENCE - U.S. PATENT DOCUMENTS

Document Number	Examiner Initial*	Patent Number	Date	Name	Class	Sub Class	Filing Date If Appropriate
A1		5,631,099	05-20-97	Hockaday	429	30	10-21-95
A2		5,759,712	06-02-98	Hockaday	429	30	01-06-97
A3		5,861,221	01-19-99	Ledjeff	429	32	07-27-94
A4		5,925,477	07-20-99	Ledjeff	429	32	01-23-96
A5		6,060,188	05-09-00	Muthuswamy	429	31	04-06-98
A6		6,127,058	10-03-00	Pratt	429	30	10-30-98
A7		6,312,846	11-06-01	Marsh	429	30	11-24-99

B REFERENCE - FOREIGN PATENT DOCUMENTS

Document Number	Examiner Initial*	Patent Number	Date	Country	Class	Sub Class	Translation	
							Yes	No
B1		WO 01/95406	12-13-01	PCT	H01M		X	
B2		GB 2339058	01-12-00	GB	H01M	8/00	X	
B3		JP 8050903	1996	JP	H01M	8		X
B4								

C REFERENCE - OTHER DOCUMENTS (Including Author, Title, Date, Pages, Etc.)

Document Number	Examiner Initial*	Other Documents Citation
C1		

Examiner:	Date Considered:

*Examiner:	Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.